5:00

WHEN COMPLETE HEART BLOCK COMPLICATES STREPTOKINASE-TREATED ACUTE MYOCARDIAL INFARCTION, IS URGENT CATHETERIZATION WARRANTED ?

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Complete heart block (CHB) remains an ominous prognostic sign in pts with acute myocardial infarction (AMI) despite the administration of thrombolytic agents. To examine whether early catheterization and PTCA might be warranted in this subgroup, we retrospectively studied 481 pts with AMI who received streptokinase (SK) and were catheterized within 24 hrs of admission. 34(7%) pts developed CHB within 24 hrs of admission. The CHB resolved in 91% of pts by 72 hrs. Despite a median time of 3.1 hrs from symptom onset to SK treatment, only 21% of pts were reperfused by SK alone. 28 of these pts were successfully reperfused by SK+PTCA (Rep) and were compared to the 6 nonreperfused pts (NoRep). The groups were comparable with respect to their mean age (57±10), sex (74% male) and infarct location (85% inferior).

	Rep	NoRep	p
Ejection fraction	47±12%	43±12%	ns
# diseased vessels	1.9±0.8	2.5±0.8	ns
In-hospital mortality	5(14%)	4(67%)	0.03
1 year mortality	6(18%)	5(83%)	0.02

Values are mean±standard deviation, ns = p>0.05

Conclusions: Acute infarcts complicated by early complete heart block are associated with a very low infarct artery patency despite timely treatment with SK. Patients with complete heart block who are reperfused by SK with or without PTCA have a much better prognosis than those not reperfused despite similar ventricular function. This study suggests that early intervention may be helpful in this high risk subgroup.

5:15

DIRECT ANGIOPLASTY FOR ACUTE MYOCARDIAL INFARCTION: VALUE OF THE INITIAL ECG IN DEFINING REPERFUSION BENEFIT IN RIGHT CORONARY ARTERY INFARCTION

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The benefit of myocardial reperfusion (REP) in acute inferior myocardial infarction is controversial. To determine if the initial ECG could distinguish which pts were most likely to benefit from REP, 110 pts who underwent direct angioplasty for enzyme confirmed acute inferior infarction due to right coronary occlusion were divided into high risk (HR) (n=69) and low risk (LR) (n=41) groups. Pts were considered HR if inferior ST segment elevation was accompanied by (1) complete heart block, (2) anterior precordial ST depression, (3) lateral ST elevation, or (4) right precordial ST elevation. Angiographic success was achieved in 91.8% with a mean REP time of 3.7 hours. Age, sex, successful REP, REP time, prior MI, and multivessel disease were similar in HR vs LR. Peak CPK was higher in HR pts (1697 vs 947) but not significantly different (p=.11). Initial LVEF was significantly lower in HR vs LR (57.4% vs 62.9%, p<.02). Angiographic follow-up in 45 pts with paired ventriculograms and patent infarct arteries demonstrated significant improvement in LVEF for HR (N=25, 57.7%-62.0%, p=.02) but not for LR (N=20, 65.6%-66.0%, p=NS).

Conclusions: The initial ECG in acute right coronary infarction defines a high risk subgroup with lower initial LVEF and significant improvement in LVEF after REP by direct angioplasty. Low risk RCA infarction is associated with a high initial and final LVEF and uncertain reperfusion benefit.

Monday, March 4, 1991
4:00PM–5:30PM, Room 264, West Concourse
Coronary Artery Assessment by New Techniques

4:00

FREQUENCY AND CLASSIFICATION OF IN VIVO CORONARY ATHEROSCLEROSIS IN ACUTE CORONARY SYNDROME AS ENCOUNTERED USING PERCUTANEOUS ANGIOSCOPY

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The offended coronary segments of 50 consecutive patients having either unstable angina or AMI were endoscopically examined using percutaneous transluminal coronary angioscopy (PTCAS) we developed for combined use with ordinary contrast arteriography (CAG). Among 37 successful angioscopic examinations, atheromatous plaque (10%), thrombus (14%), or atheromatous plaque together with thrombus (76%) were encountered at the offended coronary sites. Angioscopic definitions were given to these atheromatous changes to differentiate between thrombus and atheroma plaque. The atheroma plaques were classified progressively into stages I-V based on severity, with frequencies:

Stage	Freq.	Appearance	Endotherial Covering
I	8%	elevated/flat	grey/white/smooth/shiny
II	11%	elevated/uneven	yellow/grey/coarse/dim
III	32%	corrugated	grey/yellow/rough
IV	35%	stalagmite	patched: misc./rough
V	14%	torn/ulcerated	mixed: misc./rough

The results of this study indicate that the presence of thrombus has a strong link with the occurrence of acute coronary events. Additionally, stages III-V were classified by distinct appearances as follows: III has a corruguted surface, IV stalagmite-like protrusions, and V represents serious endotherial disruption. The stages seem to be linked developmentally. In conclusion, intracoronary thrombus and stage III-V athroma plaques play important roles for the mechanism of acute coronary syndrome.

4:15

ASSESSMENT OF CORONARY ARTERIAL STENOSES POST-INTERVENTION BY QUANTITATIVE ANGIOGRAPHY VERSUS INTRACORONARY ULTRASOUND IN 13 PATIENTS UNDERGOING BALLOON AND/OR LASER CORONARY ANGIOPLASTY

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Previously-described limitations of quantitative angiography (QA) in assessing coronary artery (CA) stenoses are likely to be further complicated following percutaneous intervention (I), due to multiple contrast columns resulting from plaque cracks and dissection clefts. To determine how measurements of CA stenoses post-I analyzed by QA compare to measurements made by intracoronary ultrasound (ICUS), we performed ICUS on 13 pts undergoing balloon (10) and/or excimer laser (3) angioplasty. Corresponding ICUS and angiographic images from I sites were analyzed for luminal diameter (L D), cross sectional area (CSA), and %stenosis. ICUS dimensions were obtained by direct measurement of minimal LD and planimetry of L CSA from digitized images, using ICUS catheter, as calibration instrument. QA was performed using a commercially available, previously validated computer-automated edge detection system. Results are listed in the following table:

	LD mm	L CSA mm^2	%D Stenosis	%CSA Stenosis	Correlation between measurements made by
IVUS	3.0±.2	6.9±.5	24±4	37±7	ICUS and QA were poor
QA	1.8±.1	2.8±.5	42±5	65±6	for minimal LD (r=.70)
r	.70	.71	.47	.53	and CSA (r=.71) and

even poorer for % LD stenosis (r=47 by LD, r=.53 by CSA). Analysis of ICUS images disclosed that most profound discrepancies involved I sites in which large crescentic plaque cracks required non-geometric planimetry to measure CSA. These findings suggest that algorithms constructed for QA may not be optimal for QA of CA stenoses post-I.